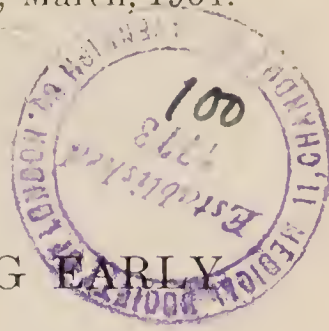


Box 1

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## A HUMAN EMBRYONIC VESICLE SHOWING EARLY PLACENTA FORMATION.

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(From the Pathological Laboratory of St. Mary's Hospital.)

THE specimen from which the sections exhibited were taken was given to me in the laboratory of St. Mary's Hospital in June, 1903, by Dr. D. F. Harbridge. It had been passed from the vagina of one of his patients about June 16th. After the passage of the specimen the patient had profuse hemorrhage for a week, and had fainted on account of the loss of blood.

On November 17, 1902, the woman had been in a trolley accident, and six days later she had a miscarriage. The product of conception was estimated by Dr. Harbridge to be between the sixth week and the second month of development. Since this miscarriage the patient's menstrual periods had been irregular and the flow had been profuse.

The specimen was a spherical, fleshy mass, brown in color, about 0.5 cm. in diameter. On section it was found to contain a cavity, which was lined by a membrane that resembled amnion in appearance.

Microscopically this membrane proved to be chorion, with its villi projecting into the maternal blood spaces and bathed in the maternal blood. The villi are seen to be composed of fetal mesoderm, which is limited by two layers of tissue: first, a layer of distinctly outlined columnar cells, each containing an oval nucleus; and second, a continuous layer of cytoplasm containing irregular nuclei, but showing no demarcation into cell areas. The former of these layers, known as the layer of Langhans, is formed of the fetal ectoblastic cells, which are the remains of the trophoblast; and the latter is the syncytium, a descendant of the trophoblast.

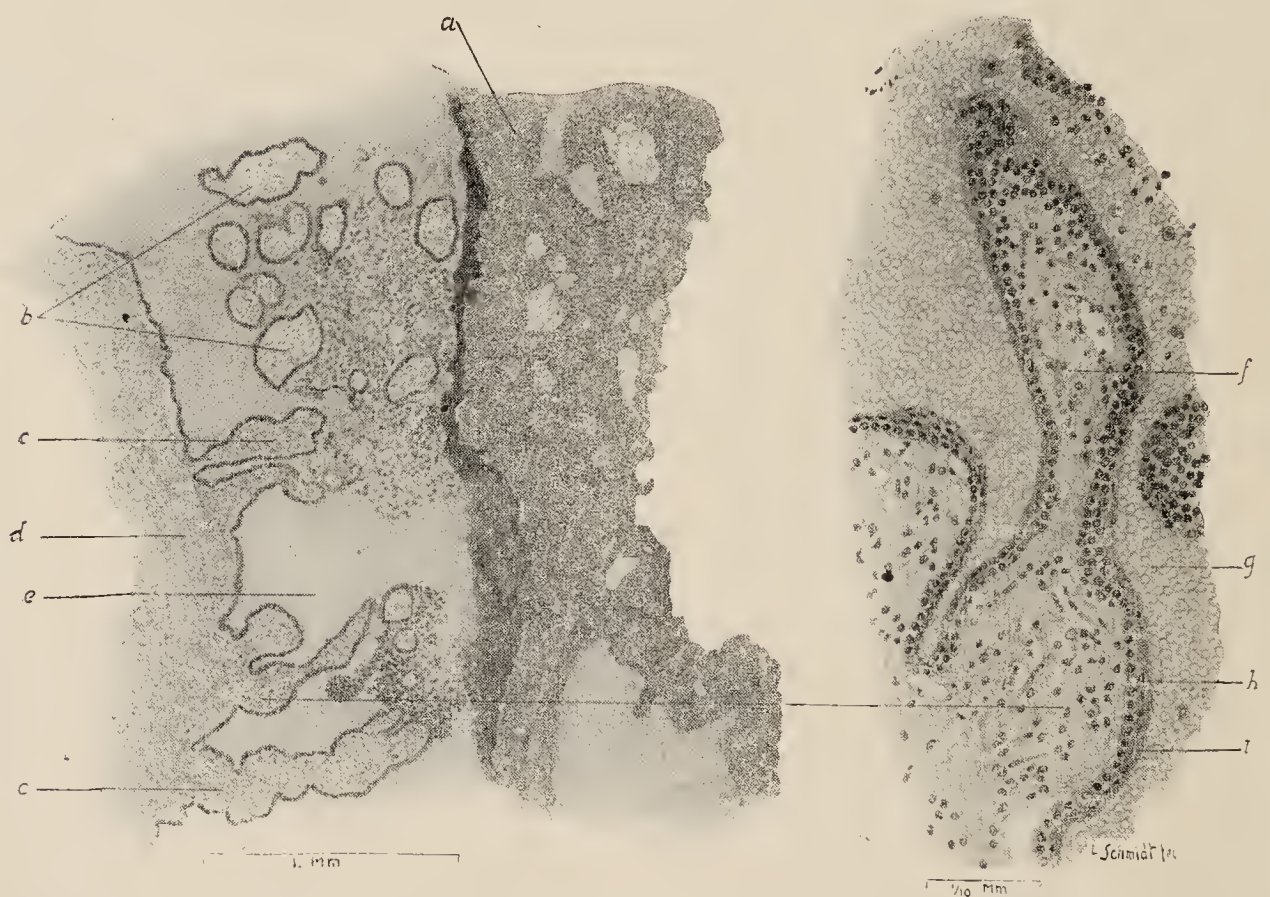
The tissue at the periphery of the section is the decidua placentalis, and shows the dilated vessels which ramify in it.

The earliest recorded human placenta that has been examined is that described by H. Peters, of Vienna, in 1899. The following is a brief résumé of Peters' conclusions, after studying the appearances of the developing embryonic vesicle, which he estimated to be four days' old:



By the time the impregnated ovum reaches the uterine cavity it is surrounded by a chorion, which is covered on its free surface by epithelial cells of ectoblastic origin. The embryonic vesicle is lodged in a fold of the decidua, and, by a process of erosion, eats its way into the stroma of that membrane, the point of entrance of the embryonic vesicle into the stroma of the decidua being marked by a blood clot. In this way the decidua placentalis is produced between the muscular wall of the uterus and the embryonic vesicle, and the decidua capsularis is produced between the embryonic vesicle and the cavity of the uterus.

The epithelium of the chorion proliferates and forms a dense mass of cells known as the trophoblast, which presents villous projections,



Section of young human placenta. *a*. Decidua placentalis. *b*. Chorionic villi in cross-section. *c*. Chorionic villi in longitudinal section. *d*. Chorion. *e*. Maternal blood space. *f*. Mesodermic core of chorionic villus. *g*. Red blood corpuscles in maternal blood spaces. *h*. Layer of Langhans. *i*. Syncytium.

with intervillous spaces. The villi grow into the decidua placentalis and become attached to the deeper layers of that tissue or to the muscular wall of the uterus, coming in relation as they grow with the dilated decidual capillaries. By phagocytic action the cells of the trophoblast absorb the endothelial lining of these capillaries, allowing their contained blood to lie between the projecting villi. The villi, at first simple, subsequently become branched, the branches lying free in the decidual blood spaces. Coincidentally with these changes, the chorionic mesoderm becomes vascularized by the ingrowth and extension of the allantoic bloodvessels, by which means the fetal blood is carried into the chorionic villi in close relation with the maternal blood spaces. The maternal blood on the one

side and the fetal blood on the other side absorb the cells of the trophoblast until only two layers are left, the layer of Langhans and the syncytium. In the future development the former layer is absorbed so that in the placenta at term the syncytium is all that remains of the original ectoblastic covering of the chorion. Then the fetal blood is separated from the maternal blood by the syncytium, the interposed mesoderm of the villus, and the endothelium of the fetal capillaries.

